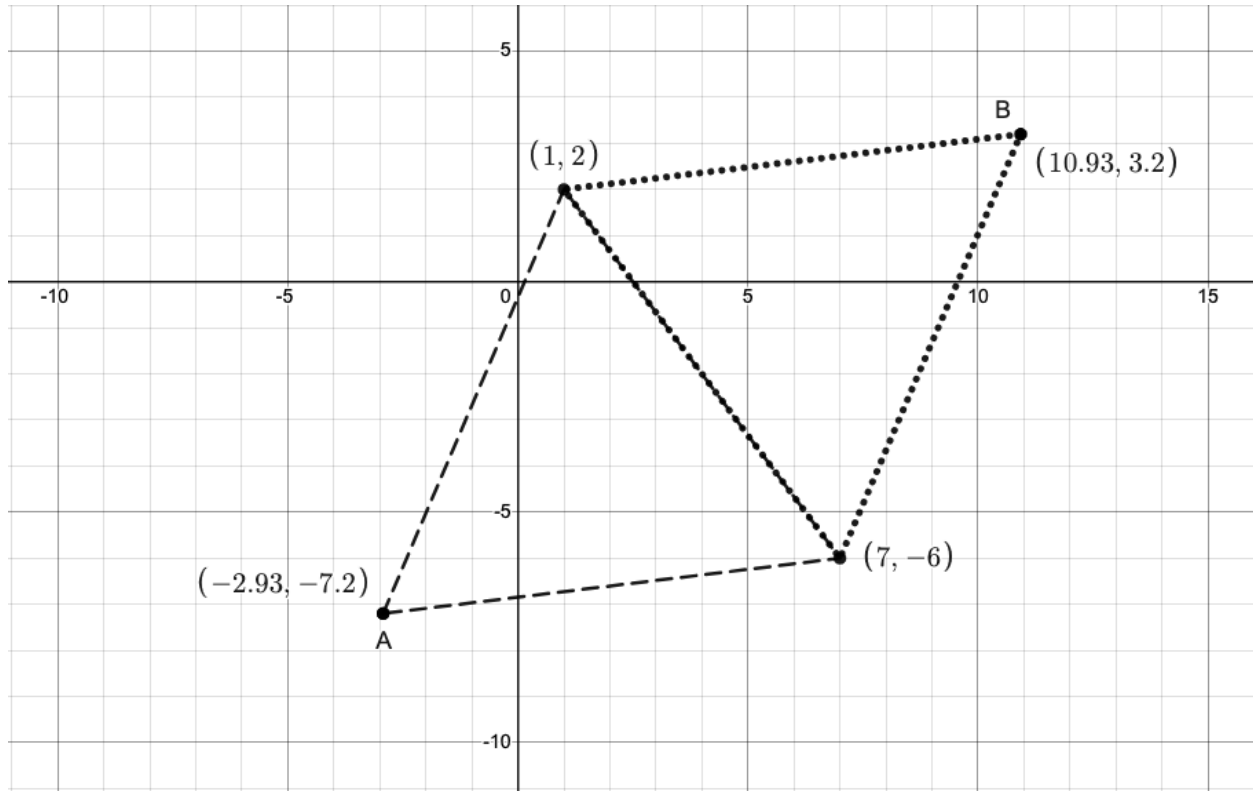


## 5. Dominika

**Program Name:** Dominika.java

**Input File:** dominika.dat

An equilateral triangle is a triangle in which all three sides are the same length. An equilateral triangle is also equiangular, meaning that all three interior angles are congruent and are each 60 degrees. For example, if the points (7,-6) and (1,2) are given, two equilateral triangles can be formed. The first triangle (dashed lines) is formed with the addition of the point A (-2.93,-7.2), and the second triangle (dotted lines) is formed with the addition of the point B (10.93,3.2). Note: these values are rounded to two decimal places.



Dominika has been given two coordinates representing two out of the three points on an equilateral triangle, but the third point is missing. Can you help Dominika write a program that is able to find these two missing points?

**Input:** First line will contain an integer  $N$  in range  $[1,20]$ , the number of test cases. Each of the following  $N$  lines will contain four whole numbers, separated by spaces. These numbers represent  $A_x A_y B_x B_y$ , where  $A$  and  $B$  are the two given points. All whole numbers will be in range  $[-20,20]$ .

**Output:** For each test case you are to output: "Test case: #" where # is the current test case, followed by the two points that are missing, that are needed to make the two equilateral triangles. Each point is to be printed out on its own, individual line. All output should be rounded and printed out to two decimal places. The point with the smallest  $x$  value should be output first. If both  $x$  coordinates are the same, then output the point with the smallest  $y$  value.

*Sample Input and Output on next page*

*Dominika continued...*

**Sample input:**

```
10
4 -7 7 14
-10 -14 -1 2
9 8 -18 5
7 -6 1 2
-15 -1 -14 15
1 -16 -13 11
-5 4 8 -13
-6 -2 8 18
3 -16 1 -12
0 0 3 0
```

**Sample output:**

```
Test case: 1
(-12.69,6.10)
(23.69,0.90)
Test case: 2
(-19.36,1.79)
(8.36,-13.79)
Test case: 3
(-7.10,29.88)
(-1.90,-16.88)
Test case: 4
(-2.93,-7.20)
(10.93,3.20)
Test case: 5
(-28.36,7.87)
(-0.64,6.13)
Test case: 6
(-29.38,-14.62)
(17.38,9.62)
Test case: 7
(-13.22,-15.76)
(16.22,6.76)
Test case: 8
(-16.32,20.12)
(18.32,-4.12)
Test case: 9
(-1.46,-15.73)
(5.46,-12.27)
Test case: 10
(1.50,-2.60)
(1.50,2.60)
```